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Keynote Address

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ABSTRACT: Most modern environmentalists during their formative years have had little actual contact with wildlife under natural conditions. Their wildlife philosophies have been developed via the mass media and from experiences with animals as pets or confined in zoos. In general, modern environmentalists are sincere, dedicated, idealistic and enthusiastic, but they often lack realism and are blessed with the innocence of naivete. The majority of people in the United States now exhibit strong affection for wild animals and are deeply concerned over any actions perceived as causing pain to individual animals. These attitudes towards wild animals will impact on future wildlife damage control programs. In order to preserve scientifically sound wildlife damage control programs, efforts must be increased in non-lethal control methodology. Also; solid unbiased evaluations of wildlife damage control programs must be conducted and the results of those evaluations disseminated to the general public.

Way back when, when most of you and I were growing up, we were exposed to our environment differently than today's children and young adults. I vividly recall my early field experiences. Fishing, hunting, camping, hiking, gathering hickory nuts, picking cherries, catching and selling night crawlers and collecting sap from a sugarbush in Michigan were all part of my growing up. My parents were not financially well-off, so I began working and paying for my room and board when I still was in grade school. I had to make it on my own. By the time I had graduated from high school, I owned the third largest taxidermy business in Michigan, had already hunted antelope2 and mule deer in Wyoming, caught grayling from the Yukon River, and been on pack trips in quest of mountain goats, grizzly bears, caribou, and mountain sheep along the British Columbia/Alberta border. Intermingled with those experiences were other activities such as competitive skeet and smallbore rifle shooting, fly tying, handloading, farming, photography, archery and trapping. As you can see, the out-of-doors played a significant role during my formative years. I am sure that many of you can look back and recall the same types of experiences associated with your youth.

Those experiences developed our outlook on life. They established our philosophies, and they provided us a solid contact with nature. Essentially, we grew up knowing that nature acts in a very effective but often cruel manner. The wolves I watched killing a moose in the Yukon Territory were certainly not acting in a humane fashion. The black rat snake swallowing the shrieking baby cottontail in Michigan was not too merciful. The magpie I saw picking out the eye of a starvation-weakened cow elk in Idaho certainly showed little compassion for the plight of the elk. Tenderness and kindness are human characteristics not commonly

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Accepted common and scientific names of higher vertebrates mentioned in the text are presented in Appendix 7.

reflected in the workings of Mother Nature. You and I are aware of this, but is the average modern environmentalist?

You and I know that "natural selection" involves disease, starvation, and death. Wild animals are not immortal. Death is an integral part of life. We have been exposed to the real environment. We have seen Mother Nature at work. Several of us have experienced her viciousness and her cruelty. We all marvel at the effectiveness of Mother Nature as she perfecta, *through natural* selection, the plant and animal species that co-exist on this earth, the intricate trophic dynamic balances of food chains and food webs, and the complexities of plant and animal successions. But, people like you and I are fast becoming a minority. Many of the young, technically-trained and legally-astute modern environmentalists, are often oblivious to how nature works.

During the last decade or so, I have seen a gradual shift in the environmental backgrounds of students entering the Fisheries and Wildlife Biology curriculum at Kansas State University. Their knowledge of wildlife natural history is almost non-existent now, whereas that was not the situation just 15 years ago. Rather than being well read in the wildlife field when they enter our wildlife curriculum, the current students are quite naive. We now must teach the difference between a bobwhite and a woodcock, between a mallard and a pintail, between a mule deer and a white-tailed deer, between a moose and a caribou, and even between a male and a female pheasant. Many students major in wildlife biology because they "like the outdoors", or because they "want to do something to help animals." This rationale for entering the field of wildlife biology places these students in the "Naturalistic Attitude" category described by Kellert ('.976). A naturalistic person has affectionate feelings for animals and gains personal satisfaction from contact with wilderness. A survey in a large conservation class at Kansas State University last spring disclosed that 71% of the students fell into the naturalistic category. To many of those students, wild animals were innocent and virtuous. The students exhibited *anthropomorphic* notions, i.e., imputing to the wild animals feeling of fear, terror, love, and pain analogous to humans in the same situation.

'These students are just as sincere and dedicated as we were when we entered the wildlife profession. They are bright and intelligent. Many of them possess technical skills and abilities far superior to ours. They are the products of a technological society that put a man or. the moon a decade after SputniK, of a society that minaturized electronic circuitry so well that they can play Pac Man on their wrist watches, and of a society that conceived a series of telecommunication satellites that keeps us in constant contact with world events. Star Wars, War Games, and the Return of the Jedi convince them that natural resources have no limitations, good always wins out over evil, and that computers can provide solutions to all complex problems instantaneously.

Mathematical modelling enables the modern environmentalist to simulate predator-prey interactions of theoretical populations. Those models are complex and include food supply, fecundity, predation, and natural mortality, but, the young environmentalist never personnally observes those events. Population dynamic models are cold, artificial representations of a series of assumed interactions, e.g., K or = selection, density dependent verses density independent mortality, energy flow, and/or nutrient cycling. Mathematical models may, or may not, provide a correct assessment of the way nature works. Few population models have been tested objectively in the wild, yet their predictions are looked upon as

infallible because they are generated by a computer. The modern environmentalist does not spend long hours in the field observing the populations under natural conditions. What I am trying to point out is the naivete and idealistic character of the modern environmentalist.

Last spring, following 1 of my lectures in a wildlife conservation class on natural mortality, a very sharp student questioned my statement that mountain lions starve or emigrate when they deplete their food resource. That student was from an urban area and had a good background in theoretical ecology. She actually believed that optimal foraging strategies and adaptive reproductive strategies prevented starvation and over-population in a natural ecosystem. Because that student had never been exposed personally to the workings of nature, her mind could not accept the fact that starvation and death are natural occurrences in the wild. That student reflects the general attitude of the modern environmentalist. Most modern environmentalists are intelligent, dedicated, sincere, and enthusiastic. However, modern environmentalists often lack realism, they have tunnel vision, and they are blessed with the innocence of naivete. The attitudes and philosophies of the modern environmentalists reflect those of our society in general.

I want to address 2 issues with you this morning. First, how are the philosophies and attitudes of modern environmentalists developed in our society, and second, how will these attitudes and philosophies impact on future wildlife damage control programs?

DEVELOPMENT OF PHILOSOPHIES AND ATTITUDES

Relative to attitudes towards wildlife, over 65% of the people in the United States can be characterized as naturalistic, humanistic, or moralistic (Kellert and Derry 1980). Persons thus characterized exhibit strong affection for wild animals and are deeply concerned over exploitation of wildlife, especially any actions that are perceived as causing pain to the individual animal. The naturalistic/humanistic/moralistic attitude is significantly more prevalent among those less than 35 years of age, than among those over 35 years of age. The younger age group is much more willing to insure diverse socioeconomic disruption for the sake of protecting wild animals than are older adults. Such difference in attitudes between younger and older adults appears to be correlated with the trend towards greater urbanization and increased affluence in our society. Persons under 35 years of age constitute over 60% of this country's population (Miller 1982).

You must realize that the American public as a group has an extremely limited knowledge of wild animals. For example, 74% of Americans over 18 years of age believe the coyote is an endangered species, only 46% of Americans know that veal comes from young calves, and 87% of our fellow Americans believe that raptors are small rodents. Through the mass media, Americans under 35 years of age have been made aware of, and swayed to object to, killing baby seals, spraying pesticides, and using leghold traps. They are much less familiar with the lead/steel shot issue, or the adverse impact of habitat loss on wildlife populations (Kellert 1980a).

The 1960's was an era in which the mass media began to focus on specific "attractive" animals such as wild horses and burros, seals, bald eagles, grizzly bears, California condors and so on. That coincided with the impressionable

humanistic/moralistic newspaper articles dealing with emotional wildlife issues has been greater from 1960 onward than during the early portion of this century (kellert and Westervelt 1981). Increased emphasis on those emotional issues had a great impact on the attitudes and philosophies developed by today's young adults.

concurrent demonstrations in support of non-violence associated with the Korean and Vietnam conflicts reinforced the developing naturalistic /humanistic/moralistic wildlife attitudes in our youth during the ***1',h0'9*** *and 1970'x. I do not believe the mass media's role in this attitudinal development was intentional, rather it was the product of the new free-thinking _r--erpretive journalistic technique that stresses sensationalism. Direct contact with the environment developed your and my philosophies and attitudes towards wildlife. Few of the current younger generation have that type of exposure during their formative years, and their philosophies and attitudes are a reflection of their urban environment and the type of material presented in motion pictures, -ished in newspapers, and shown on television.*

Television shows such as "Wild Kingdom", "Jaceues Cousteau", "Animals. Animals Animals", and "Wild. Wild World of Animals" all have significant impact or the development of wildlife-related attitudes. Approximately 80E of the American public watches one or more of the above television shows frequently and r14 of the viewers indicate that the shows have a moderate to very strong indulgence on their views and knowledge of wildlife (Kellett 1980b). It is not -prising that most viewers of the above "wildlife" shows have strong ruralistic/humanistic/moralistic attitudes. The cause and effect relationship

unclear, i.e., do the television shows cause these attitudes, or do persons ...h those attitudes watch the shows? In either case, the viewing audience often _: not exposed to the realities of natural population regulation or the cruelty of Mother Nature. Photographic techniques cultivate warm feelings for the young animals, develop sympathetic affection for sick and lame animals, and ascribe anthropomorphic characteristics to social relationships among wild animals. One only needs to recall such diverse movies as Bambi, Born Free, and Return of the Jedi to exemplify these very effective and impressive emotional impacts.

In addition to the mass media, public and private zoos have a great influence on the development of attitudes towards wildlife. You and I often overlook the role of zoos, but to the urban resident, zoos serve as an important contact with animals. Surveys by Cheek (1976) and Kellert (1976) indicate that 46 to 52E of American adults visited a zoo during the 2-years previous to their studies, primarily for the educational benefit of children. Zoo visitors tend to be young adults with humanistic characteristics as indicated by their strong persona: affection for individual animals. Zoo enthusiasts are quite concerned about animal welfare and animal rights.

The rapid growth of the wildlife pet trade is astonishing and certainly impacts on the attitudes of humans toward wildlife. At least 13E of American households contain. a pet bird, and another 13 to 23E own a wild pet other than a bird (Pomerantz 1977, Kellert 1980b). Those wild pets include several types, with rabbits, raccoons, snakes, squirrels, turtles, and skunks leading the list. Generally, wildlife pets are considered "humanized animals" and are incorporated into the dynamics of the human family. In addition to wild pets, 55E of American households own a dog or a cat (Wilber 1976). The principal reason for owning a

animal welfare issues.

Obviously, mass media presentations, animals confined in zoos, and household pets cannot substitute for direct contact with wildlife under natural conditions. In fact, these types of wildlife experiences often distort the realities of the natural environment. Conservation organizations could be a source of objective information on wildlife, however, only 4$ of our fellow Americans belong to what you and I would term a conservation-related organization, i.e., Ducks Unlimited, Safari Club International, and so on (Mitchell 1980). Approximately 6$ of our fellow Americans belong to peripheral conservation-type organizations such as National Geographic Society or the American Museum of Natural History. Memberships in "humane/preservationist" organizations (Fund for Animals, American Horse Protection Association, Defenders of Wildlife, Sierra Club, etc.) are held by approximately 5$ of the American public (Kellert 1980b). As you can see, the low membership in conservation-related organizations provides objective information on wildlife to only a small portion of the general public.

In summary, a majority of Americans hold naturalistic, humanistic, and/or moralistic attitudes toward wildlife. The trend began in the 1960's, and will no doubt continue as long as our society remains affluent. The majority of Americans now exhibit strong affection for wild animals, and object to actions perceived as causing harm or pain to individual wild animals.

IMPACTS OF ATTITUDES ON DAMAGE CONTROL PROGRAMS

To believe that changing attitudes towards wildlife in our society will not effect the future direction of your wildlife damage control programs is naive to the extreme. Increasing human affection for wildlife will continue as we focus more attention on threatened and endangered species, as we humanize more animals (like the Ewoks in the Return of the Jedi), and as the population becomes more removed from direct contact with wild animals in their natural environment. We have the option of voluntarily changing the thrust of wildlife damage control programs, or having those changes developed by others and forced upon us. Whether or not we want to admit it, wildlife damage control programs are responsive to the whims of society via regulatory, judicial, legislative, and/or economic forces. President Nixon's Executive Order 11643 (Nixon 1972) restricting the use of predacides on federal lands was in response to changes in human attitudes towards wild animals. Much of the anti-hunting and anti-trapping sentiment we see today is a reflection of a transformation of human attitudes in our society. Many Americans feel strongly about these issues and are very vocal. One way to counter the impact of that segment of society is to fight in the court system. There is some merit to this, and I certainly support such legal efforts. However, I believe the alterations of human attitudes towards wildlife will continue in the future, and unless we realize this we may lose the war even though we win a court battle here and there. Legislative and judicial actions are important, but we must look at long-range strategies as well.

National surveys indicate that the objection to hunting is focused on the "trophy hunter," or the strictly "sport hunter." A large majority of society (82 to 85$) approve of hunting if the ultimate goal is to eat the meat of a humanely killed animal (Kellert 1979). Approximately 87$ of the public favors strong enforcement of game laws, and even supports prison sentences for habitual

violatcrs. Therefore, sport hunting will be accepted more readily by the general public if (1) hunters become better marksmen so that game will be killed humanely, (2) the meat is not wasted, and (3) slob hunters and poachers are eliminated from the hunter segment of our society. Many of our hunter-education programs are focusing on these 3 areas now, and we may see some beneficial results in the next decade or so.

I believe you in the animal damage control area need to reevaluate some of your programs, too. Each of you will benefit by reviewing the results of Kellert's (1979) survey of public attitudes towards animal damage control. Although it focuses primarily on the control of coyote predation on livestock, it conveys many other bits of information as well. The different attitudes of affected versus unaffected segments of the population are to be expected, i.e., 70 to 75$ of ranchers favor use of poisons whereas 90 to 92% of the general public disapproves of the use of poisons for coyote control. What is frightening is the fact that the informed and the uninformed public reflect the same attitude against predator control. The public is not opposed to predator damage control but the public is against indiscriminate killing of predators and favors methods that are "offender-specific and relatively humane" (Kellert 1979:56). Between 67 and 69$ of the general public favors capturing offending coyotes and relocating them to areas away from livestock, even though this method would be very expensive for the livestock producer. We all know that trapping and relocating offending coyotes probably is not a practical wildlife damage control option, but, the public at large believes it can be done, and suggests it as an alternative to killing the c.- coyote

Environmentalists used legal action to force the Florida Game and Fresh Water Fish Commission to include the trapping/ relocation approach to reduce the size of a starving deer herd in the Everglades during the summer of 1982 (Robel 1983). That approach was totally unsuccessful, but the failure has not received widespread coverage by the mass media. Until the general public realizes that trapping and relocating wild animals is not a viable method to reduce wildlife damage, we will continue to be pressured into using the trapping/relocation approach in our wildlife damage control program.

I believe 2 areas require our immediate attention. First, we must give serious attention to non-lethal methods to reduce animal damage, **311a** document the results. Second, we must communicate the results of our efforts to the general public --- no longer can we afford the luxury of talking to ourselves.

A majority of you will say that most of your time is devoted now to using non-lethal methods to reduce or prevent damage by wildlife. Maybe that is true, but where is the documentation? While preparing this paper, I read the proceedings of each of the previous 5 Great Plains Wildlife Damage Control Workshops. I found very few papers that documented reduced wildlife damage using non-lethal methods, in fact, few papers documented reductions in wildlife damages following lethal pt non-lethal programs.

For example, in the Proceedings of the 3rd Great Plains Wildlife Damage Control Workshop (Henderson 1977), the following topics are addressed in detail once or several times:

Use of M-44s
Den fumigants

Trapping techniques
Youth fur harvest programs
Calling and shooting coyotes
Use of toxic collars on sheep
Effectiveness of aerial gunning
Use of strychnine poisoned eggs
Trapper education and furbearer management
Effectiveness of prebaiting for prairie dog control

Except for some general comments in papers describing state or federal programs, the Proceedings are almost totally devoid of any mention of non-lethal methodology. NO article in those workshop proceedings documented decreased wildlife damage as a result of wildlife damage control programs. It is your responsibility to monitor the results of your wildlife damage control efforts, and report those results to the public. Your evaluations must be statistically valid, unbiased in design, and realistic in their conclusions. You must include hard economics in your evaluations, i.e., are the methods economically warranted on a cost/benefit ratio? If your wildlife damage control efforts cannot withstand economic scrutiny, can society really be expected to condone them? Results of your successes and failures should be published in scientific journals for the benefit of your colleagues, and in the popular and semi-technical media for the benefit of the public in general.

The second needed action is an extension of the first. We must communicate to the general public the magnitude of the damage done by wildlife. Again, this involves research and documentation. Economics must be a part of this evaluation, too, if the results are to have any impact on our society. There has been some work along this line in starling/blackbird control, i.e., pretreatment assessment of the damage, then treatment followed by a posttreatment assessment of the effort. What is lacking is a solid comparative evaluation of lethal and non-lethal approaches to starling/blackbird damage control programs. Results of these types of studies must be disseminated to the general public --- not just to your colleagues in meetings such as this. Church groups, service organizations, garden clubs, social groups and other such human aggregations should be the focus of your public relations effort. For the most part, the general public sets the animal damage control policy of the nation and it is your responsibility to educate that general public. The environmental activist also needs your attention. You should interact with, and gain the confidence of activist groups. Many of the so-called narrow-minded environmentalists have radical views because we have not provided them with factual data on wildlife damage and the most economically effective techniques to reduce that damage. Each and everyone of us must assume a positive active role in the education of the general public, for unless we do, the future of scientifically sound wildlife damage control programs is in jeopardy.

SUMMARY

The attitudes towards wild animals held by the majority of the United States population have changed since wildlife damage control programs were developed. Most people in this country now believe that all wild animals are innocent and virtuous. These changing attitudes will 'impact on future wildlife damage control programs. Unless we are aware of, and react to these changed human attitudes towards wild animals, we will jeopardize the future of solid wildlife damage control programs in this country. We must document accurately the magnitude of

damage caused by wildlife, critically evaluate our programs in light of that damage, and then communicate those results to the scientific community and the general public. To do otherwise is abrogating our professional responsibilities.

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Appendix 1. Scientific names of higher vertebrates mentioned in the text.

Common Name	
Antelope	Antilocapra americana
Burro	**Eguus** asinus
Caribou	Rangifer tarandus
Cottontail (Eastern)	Sylvilagus floridanus
Elk (Wapiti)	Cervus elaphus
Grizzly bear	Ursus arctos
Moose	Aloes
Mountain goat	Oreamnos anericanus
Mountain lion	Felis concolor
Mountain sheep (Bighorn)	Ovis canadensis
Mule deer	odocoi leus hemionus
Raccoon	Procyon
Seal	C-allorhinus ursinus
Skunk	Mephitis mephitis
Squirrel	Sciurus niger
White-tailed deer	Odoco -e s virginianus
Horse	EQUUS caballus
Wolf	Canis lupus

Birds	
Bald eagle	Haliaeetus leucocephalus
Bobwhite	Colinus virginianus
California condor	Gvmnogvps californianus
Magpie (Black-billed)	Pica pica
Mallard	Anas platyr ynchos
Pheasant (Ring-necked)	phasianus colt icus
Pintail	Anas acuta
Woodcock	Scolopax minor

her Higher Vertebrates	
Black rat snake	Elaph a obsoleta
Grayling	Thvmallus arcticus